

chapter one

*a global profile***in this chapter**

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Health workers are people whose job it is to protect and improve the health of their communities. Together these health workers, in all their diversity, make up the global health

workforce. This chapter gives an overview of what is known about them. It describes the size and distribution of the workforce, and some of its characteristics, including how much it costs. It shows that there is a substantial shortage of health workers to meet health needs, but that shortages are not universal, even across low income countries. The chapter then considers how much it would cost to scale up training to meet this shortfall and pay health workers subsequently.

The data used in this chapter are drawn from many different sources, with varying degrees of completeness by country and by year. WHO supplemented this information with written requests to numerous agencies as well as with special country surveys requesting information about the numbers and types of health workers and training institutions. Substantial gaps remain, however, in the information, and the picture painted here is based on incomplete data which means that it needs to be interpreted carefully.

WHO ARE THE HEALTH WORKERS?

This report defines health workers to be all people engaged in actions whose primary intent is to enhance health. This meaning extends from WHO's definition of the health system as comprising activities whose primary goal is to improve health. Strictly speaking, this means that mothers looking after their sick children and other unpaid carers are in the health workforce.

“This report defines health workers to be all people engaged in actions whose primary intent is to enhance health”

They make important contributions and are critical to the functioning of most health systems. However, the data available on health worker numbers are generally limited to people engaged in paid activities, so the numbers reported in this chapter are limited to such workers.

Even then, the definition of a health action for classifying paid workers is not straightforward. Consider a painter employed by a hospital: the painter's own actions do not improve health, though the actions of the painter's employer, the hospital, do. Then take the case of a doctor employed by a mining company to care for its employees: the actions of the doctor improve health, though the actions of the employer do not. A classification system that considers the actions of the individual alone, or those of the employer alone, cannot place them both in the health workforce.

In principle, the report argues that the actions of the individual are most important, so that the painter is not a health worker while the mine's doctor is. However, in practice, it is not yet possible to fully apply this rule because much of the data on health worker numbers do not provide sufficient detail to allow people directly engaged in improving health to be separated from other employees (7). For this reason, the report takes a pragmatic approach and includes all paid workers employed in organizations or institutions whose primary intent is to improve health as well as those whose personal actions are primarily intended to improve health but who work for other types of organizations. This means that the painter working for a hospital is included as is the doctor working for a mine. WHO is working to devise a more detailed, standard classification system for health workers that should permit the gold standard definition to be applied in the future (see Box 1.1).

The system of counting used in this chapter allows two types of health workers to be distinguished. The first group comprises the people who deliver services – whether personal or non-personal – who are called “health service providers”; the second covers people not engaged in the direct provision of services, under the term “health management and support workers” (details are given in Box 1.1; see also Box 1.2). The report sometimes presents information for different types of health service providers, although such detail is often available only for doctors and nurses. Further explanation of the sources of the data, classification issues, and the triangulation and harmonization applied to make the data comparable across countries is found in the Statistical Annex.

The available data do not allow reporting on the people working for a part of their time to improve health, such as social workers who work with mentally ill patients. In addition, the report has chosen not to include workers in other types of occupations who contribute in vital ways to improving population health, if their main function lies elsewhere. This category includes, for instance, police officers who enforce seat-belt laws. Finally, current methods of identifying health workers do not allow unpaid carers of sick people or volunteers who provide other critical services to be counted. This exclusion is simply because of a lack of data, and all these valuable contributions are acknowledged in subsequent chapters.

Furthermore, official counts of the health workforce often omit people who deliver services outside health organizations, for example doctors employed by mining companies or agricultural firms, because they classify these employees under the

Box 1.1 Classifying health workers

The third version of the International Standard Classification of Occupations (ISCO), an international classification system agreed by members of the International Labour Organization, was adopted in 1987 and is known as ISCO-88 (2). Many national occupational classifications, and most censuses and labour force surveys, use one of the three ISCO versions. Because the system is used to classify all types of workers, the breakdown provided for health workers is not very detailed, so many ministries of health have developed their own classification systems. WHO is now working on a process to devise a more detailed, standard classification system for health workers that is consistent with the ISCO. This work coincides with the update of ISCO-88, which is expected to be ready in 2008.

The table below shows the health-specific occupational classification used in the South African census of 2001, which is typical of many countries using a three-digit ISCO coding system (four-digit codes break down each of the categories listed into subcategories). Note that traditional healers are part of the official occupational classification and are included in counts in this report where data are available.

At the same time, another internationally agreed classification system – the International Standard Industrial Classification of all Economic Activities (ISIC) – is commonly

used to define the different types of economic activity in a country. In ISIC, health is considered a separate industry. Vast numbers of workers with different training and occupational classifications are found in the health industry: many more than the health service providers themselves. These include professionals such as statisticians, computer programmers, accountants, managers and administrators and also various types of clerical staff as well as support staff such as drivers, cleaners, laundry workers and kitchen staff. Examples of the various types of occupations included for the health industry classification in the South African census are provided below.

Some health service providers work in industries other than health, such as mining or manufacturing. Accordingly, for this report, health workers include all occupations listed under the health industry, plus people in occupational groups 1–5 working in other industries.

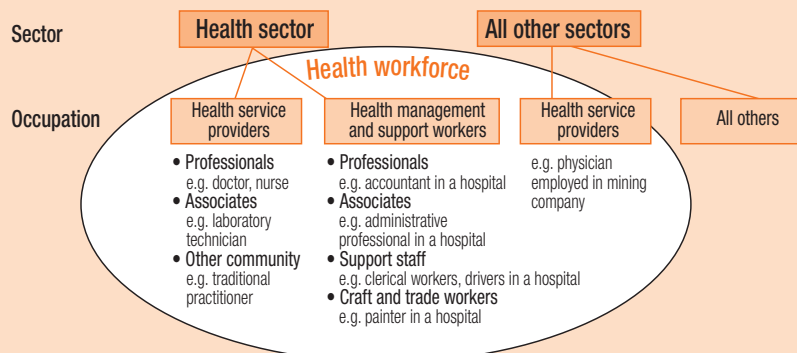
The report groups health workers into two categories that map directly into the ISCO codes. People covered by occupational codes for groups 1–5 in the table are “health service providers”; other workers in the health industry are called “health management and support workers”. This is shown in the figure, where health workers make up the first three of the four occupational boxes.

Occupational classifications for the health industry, South African census, 2001

| ISCO groups of health service providers | Type | ISCO code no. |
|--|----------------------------------|---------------|
| 1. Health professionals (except nursing) | Professionals | 222 |
| 2. Nursing and midwifery professionals | Professionals | 223 |
| 3. Modern health associate professionals (except nursing) | Associates | 322 |
| 4. Nursing and midwifery associate professionals | Associates | 323 |
| 5. Traditional medicine practitioners and faith healers | Associates | 324 |
| Examples of other occupations involved in the health industry | | |
| 6. Computing professionals | Professionals | 213 |
| 7. Social science and related professionals | Professionals | 244 |
| 8. Administrative associate professionals | Associates | 343 |
| 9. Secretaries and keyboard operating clerks | Clerks | 411 |
| 10. Painters, building structure cleaners and related trades workers | Craft and related trades workers | 714 |

Data source: (2).

Health workers in all sectors



“The global health workforce is conservatively estimated to be just over 59 million workers”

industries that employ them. An accurate count of such workers is difficult to obtain, but they make up between 14% and 37% of all health service providers in countries with available census data. Excluding them from official counts results in a substantial underestimation of the size of the health workforce and its potential to improve health. Such undercounting also prevents consideration of the complex labour market links between different sectors that could inform planning, recruitment, retention and career paths.

” HOW MANY HEALTH WORKERS ARE THERE?

The work undertaken for this report allowed WHO to update the information contained in its *Global Atlas of the Health Workforce (3)* for some countries and to find previously unavailable data for others. Data are generally more complete for health service providers than for health management and support workers but, using the best available information from various sources, a conservative estimate of the size of the health workforce globally is just over 59 million workers (see Table 1.1). This figure is conservative in so far as it is likely to undercount health workers outside the health industry in countries where census information is not available.

Health service providers account for 67% of all health workers globally, though only 57% in the Region of the Americas. A breakdown by the level of national income in a country shows that health management and support workers slightly outnumber health service providers in high income countries, while the opposite is the case in low and middle income settings where health service providers typically constitute over 70% of the total health workforce.

Within the category of health service providers, attention is often focused on the ratio of nurses (and midwives) to doctors, though the exact numbers and mix necessary for a health system to run efficiently and effectively remains unclear (4–8). The number of nurses per 1000 doctors for a typical country is highest in the WHO African Region, partly because of the very low number of doctors per 1000 population in that region. The ratio is lowest in the Western Pacific Region. There is also considerable heterogeneity among countries within regions. For example, there are approximately four nurses per doctor in Canada and the United States of America, while some other countries in the Region of the Americas, such as Chile, El Salvador, Mexico and Peru, have more doctors than nurses. Similarly, in the European Region, there is nearly one physician for every nurse in Bulgaria, Portugal and Turkey, but around five nurses for each physician in Norway and the United Kingdom.

Box 1.2 The invisible backbone of the health system: management and support workers

People who help the health system to function but do not provide health services directly to the population are often forgotten in discussions about the health workforce. These individuals perform a variety of jobs, such as distributing medicines, maintaining essential buildings and equipment, and planning and setting directions for the system as a

whole. Health management and support workers provide an invisible backbone for health systems; if they are not present in sufficient numbers and with appropriate skills, the system cannot function – for example, salaries are not paid and medicines are not delivered.

Table 1.1 Global health workforce, by density

| WHO region | Total health workforce | | Health service providers | | Health management and support workers | |
|-----------------------|------------------------|-------------------------------|--------------------------|--------------------------------------|---------------------------------------|--------------------------------------|
| | Number | Density (per 1000 population) | Number | Percentage of total health workforce | Number | Percentage of total health workforce |
| Africa | 1 640 000 | 2.3 | 1 360 000 | 83 | 280 000 | 17 |
| Eastern Mediterranean | 2 100 000 | 4.0 | 1 580 000 | 75 | 520 000 | 25 |
| South-East Asia | 7 040 000 | 4.3 | 4 730 000 | 67 | 2 300 000 | 33 |
| Western Pacific | 10 070 000 | 5.8 | 7 810 000 | 78 | 2 260 000 | 23 |
| Europe | 16 630 000 | 18.9 | 11 540 000 | 69 | 5 090 000 | 31 |
| Americas | 21 740 000 | 24.8 | 12 460 000 | 57 | 9 280 000 | 43 |
| World | 59 220 000 | 9.3 | 39 470 000 | 67 | 19 750 000 | 33 |

Note: All data for latest available year. For countries where data on the number of health management and support workers were not available, estimates have been made based on regional averages for countries with complete data.

Data source: (3).

Information has also been obtained on the relative availability of dentists and pharmacists, though fewer countries report this information. There is close to parity between the number of pharmacists and doctors in the South-East Asia Region, substantially more than in the other regions. The ratio of dentists to doctors is highest in the Region of the Americas. These data should be interpreted carefully, however, because of the difficulties involved in counting dentists and pharmacists, many of whom are likely to work in the private sector.

Public and private sector workers

Most data on the distribution of health workers between the public and private sectors describe who is the primary employer of the worker rather than where the money to pay the salary or most of the worker's income comes from. This information suggests that the majority of health service providers in low and middle income countries report their primary site of employment as the public sector: over 70% of doctors and over 50% of other types of health service providers. Insufficient information is available from high income countries to allow similar analysis; it is likely, however, that the proportions officially employed by governments are lower, because many providers are officially in private practice despite much of their income coming directly from the public purse. This is also true for providers employed by faith-based and nongovernmental organizations in many settings.

These broad averages hide considerable variation across countries with the same level of income or in the same geographical region. For example, while 70% of doctors in sub-Saharan Africa are officially employed in the public sector, in six countries in the region more than 60% of them are formally employed in the private sector. Furthermore, even in countries where the public sector is the predominant employer, public sector employees often supplement their incomes with private work or receive a large part of their income directly from patients rather than from the government (9–11). The data presented here on the relative importance of the public sector need, therefore, to be supplemented with information on health expenditures, as discussed below.

“ The proportion of female doctors in Europe increased steadily during the 1990s ”

Sex and age of health workers

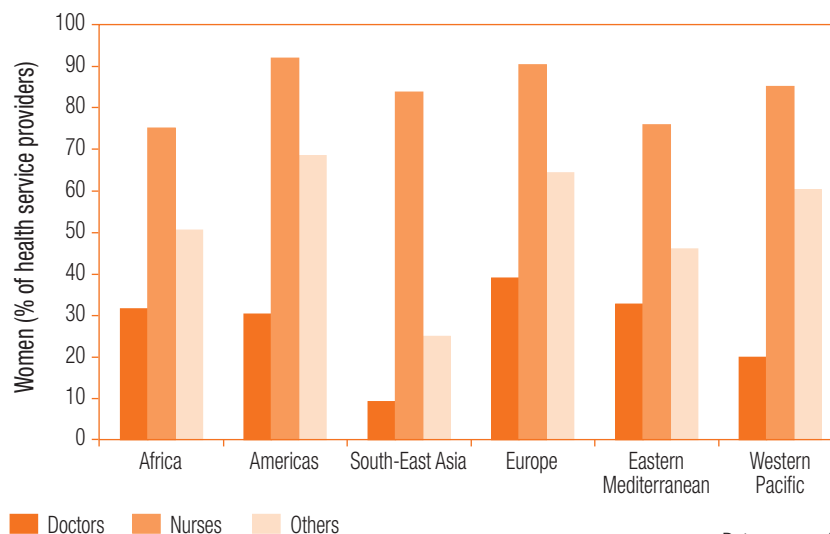
Figure 1.1 illustrates the average distribution of women health service providers across countries. Insufficient information is available on the sex distribution of health management and support workers for them to be included. Men continue to dominate the medical profession, while other health service providers remain predominantly

female. Notable exceptions exist, however. Mongolia, the Russian Federation, a number of other former Soviet republics and Sudan report more female than male doctors. Moreover, women are making substantial progress in some regions. The proportion of female doctors in Europe increased steadily during the 1990s, as did the proportion of female students in medical schools (12). In the United Kingdom, for example, women now constitute up to 70% of medical school intakes (13).

From the limited information that exists on the ages of health workers in different settings, no general patterns can be observed, though some information is available for specific countries. For example, an increase in the average age of the nursing workforce over time has been noted in a number of OECD countries, including the United Kingdom and the United States (14, 15). Policies relating to the official age of retirement are considered in Chapter 5.

It has not been possible to document trends over time in the mix of health professionals or their characteristics in enough countries to allow a global analysis. Systems for recording and updating health worker numbers often do not exist, which presents a major obstacle to developing evidence-based policies on human resource development.

Figure 1.1 Distribution of women in health service professions, by WHO region



Data source: (3).

Table 1.2 Proportion of government health expenditure paid to health workers

| WHO region | Wages, salaries and allowances of employees as percentage of general government health expenditure (GGHE) | Number of countries with available data |
|-----------------------|---|---|
| Africa | 29.5 | 14 |
| South-East Asia | 35.5 | 2 |
| Europe | 42.3 | 18 |
| Western Pacific | 45 | 7 |
| Americas | 49.8 | 17 |
| Eastern Mediterranean | 50.8 | 5 |
| World | 42.2 | 64 |

Note: Grouped proportions are simple averages of the country proportions, showing the ratio in a typical country in the region.

HOW MUCH IS SPENT ON THE HEALTH WORKFORCE?

The large numbers of health workers in the world make up an important part of the total labour force. In general, the relative importance of the health workforce is higher in richer countries than in poorer ones and can account for up to 13% of the total workforce. Payments of salaries and other benefits to health workers are also a significant component of total government health expenditure (including capital costs) (Table 1.2). A typical country devotes just over 42% of total general government health expenditure to paying its health workforce, though there are regional and country variations around this average (16). For example, governments in Africa and South-East Asia typically devote lower proportions than do those in other regions.

Information on the non-government (i.e. private) sector by itself is not available.

Data have been obtained, however, from 43 countries on the share of total health expenditure (including capital costs) from all sources, government and non-government, paid in salaries and other allowances. On average, payments to the health workforce account for just under 50% of total health expenditure, suggesting that payments to health workers in the non-government sector make up a higher proportion of total expenditures than in the government sector. However, there is little overlap between the 43 countries described here and those included in Table 1.2 because of the way data are reported by different countries, so this information should be interpreted carefully. It should also be remembered that payments made by households directly to providers, and which are not captured in official records of salaries, are not included in this analysis.

Trends over time (1998–2003) in the ratio of wages, salaries and allowances to government health expenditure are available for only 12 countries. Trends in the share of total health expenditure paid to health workers as wages, salaries and allowances are available for another 24. Neither set of figures shows any consistent pattern. The share rose in some countries and fell in others, and the average across all countries is remarkably stable.

“A typical country devotes just over 42% of total general government health expenditure to paying its health workforce”

WHERE ARE THE HEALTH WORKERS?

Uneven distribution across the globe

Health workers are distributed unevenly (17). Countries with the lowest relative need have the highest numbers of health workers, while those with the greatest burden of disease must make do with a much smaller health workforce. This pattern is summarized in Figure 1.2, where the vertical axis shows burden of disease, the horizontal axis the number of health workers, and the size of the dots represents total health expenditure. The Region of the Americas, which includes Canada and the United States, contains only 10% of the global burden of disease, yet almost 37% of the world's health workers live in this region and spend more than 50% of the world's financial resources for health. In contrast, the African Region suffers more than 24% of the global burden of disease but has access to only 3% of health workers and less than 1% of the world's financial resources – even with loans and grants from abroad.

“Countries with the lowest relative need have the highest numbers of health workers”

Uneven spread within countries

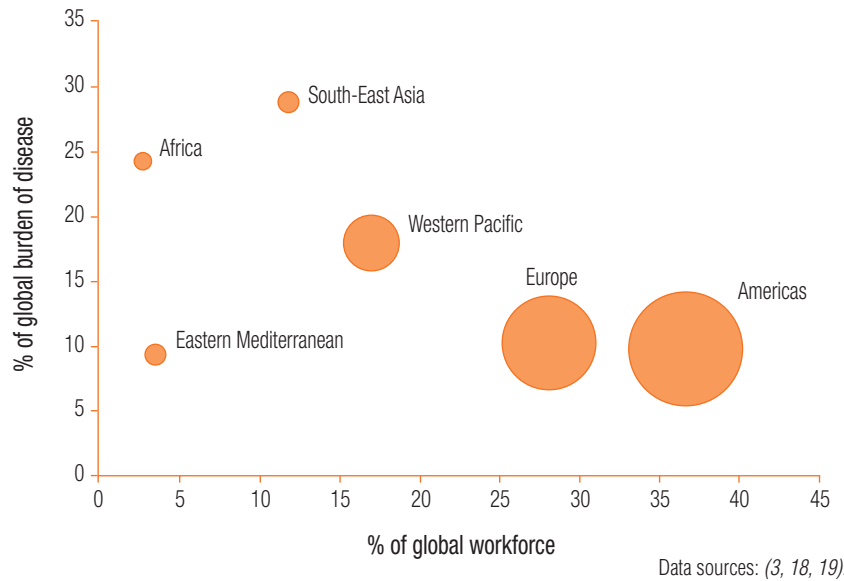
Within regions and countries, access to health workers is also unequal. For example, Viet Nam averages just over one health service provider per 1000 people, but this figure hides considerable variation. In fact, 37 of Viet Nam's 61 provinces fall below this national average, while at the other extreme one province counts almost four health service providers per 1000 (20). Similar variations exist in other countries (21).

Many factors influence the geographical variation that is observed in health worker density. Areas with teaching hospitals and a population that can afford to pay for health services invariably attract more health workers than regions without such facilities or financial support. As a result, health worker density is generally highest in urban centres where teaching hospitals and high incomes are most common. Although the extent of urbanization increases across countries with increasing income, in countries of all income levels the proportion of health professionals living in urban areas exceeds the proportion of the general population found there. This is particularly the case for doctors, as shown in Figure 1.3, where the red dotted line shows that, while under 55% of all people live in urban areas, more than 75% of doctors, over 60% of nurses and 58% of other health workers also live in urban areas.

In many countries, female health service providers are particularly scarce in rural areas, a situation that may arise in part because it is unsafe for female workers to live alone in some isolated areas. The picture may well be different if traditional birth attendants and village volunteers could be included in the calculations, as these are the domains of women in many countries, but this information is rarely routinely available. Moreover, there are some notable exceptions. For example, Ethiopia and Pakistan are among the countries that have actively sought to recruit and train female health workers in rural areas: they are called health extension workers in Ethiopia and lady health workers and lady health visitors in Pakistan.

WHO is developing a tool to help countries to identify their health service resources, including where their health workers are to be found (see Box 1.3).

Figure 1.2 Distribution of health workers by level of health expenditure and burden of disease, by WHO region

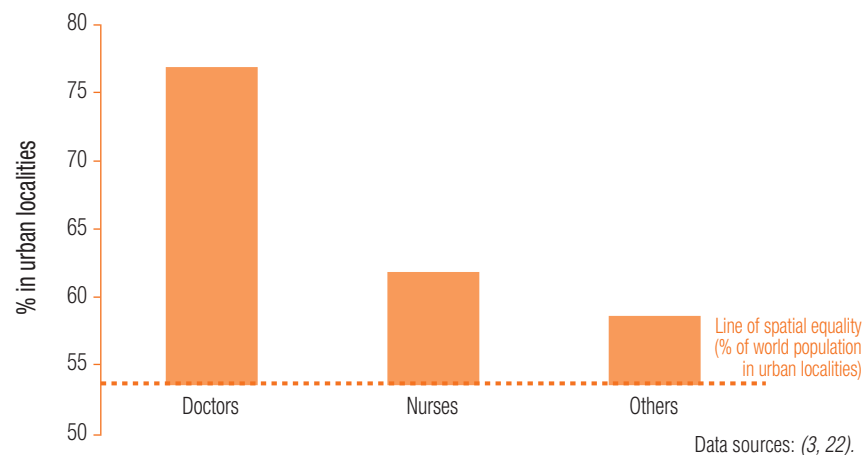


ARE THERE ENOUGH HEALTH WORKERS?

How important is the uneven geographical distribution of health workers within countries? Perfect equality is not feasible, and in some cases it is not even desirable. For instance, teaching hospitals must be strategically located, and a concentration of certain types of health workers around hospitals can be completely acceptable. But while some degree of geographical variation in health worker numbers is appropriate, the question remains: to what degree?

Although available data do not allow a simple response, coverage rates of key interventions are generally lower in areas with relatively low numbers of health workers, compared with those that have higher concentrations. This relationship can be observed across countries and within them. For example, researchers have recently found that countries with a higher density of health workers attain higher levels of measles vaccination and coverage with antenatal care (23–25).

Figure 1.3 Rural–urban distribution of health service providers



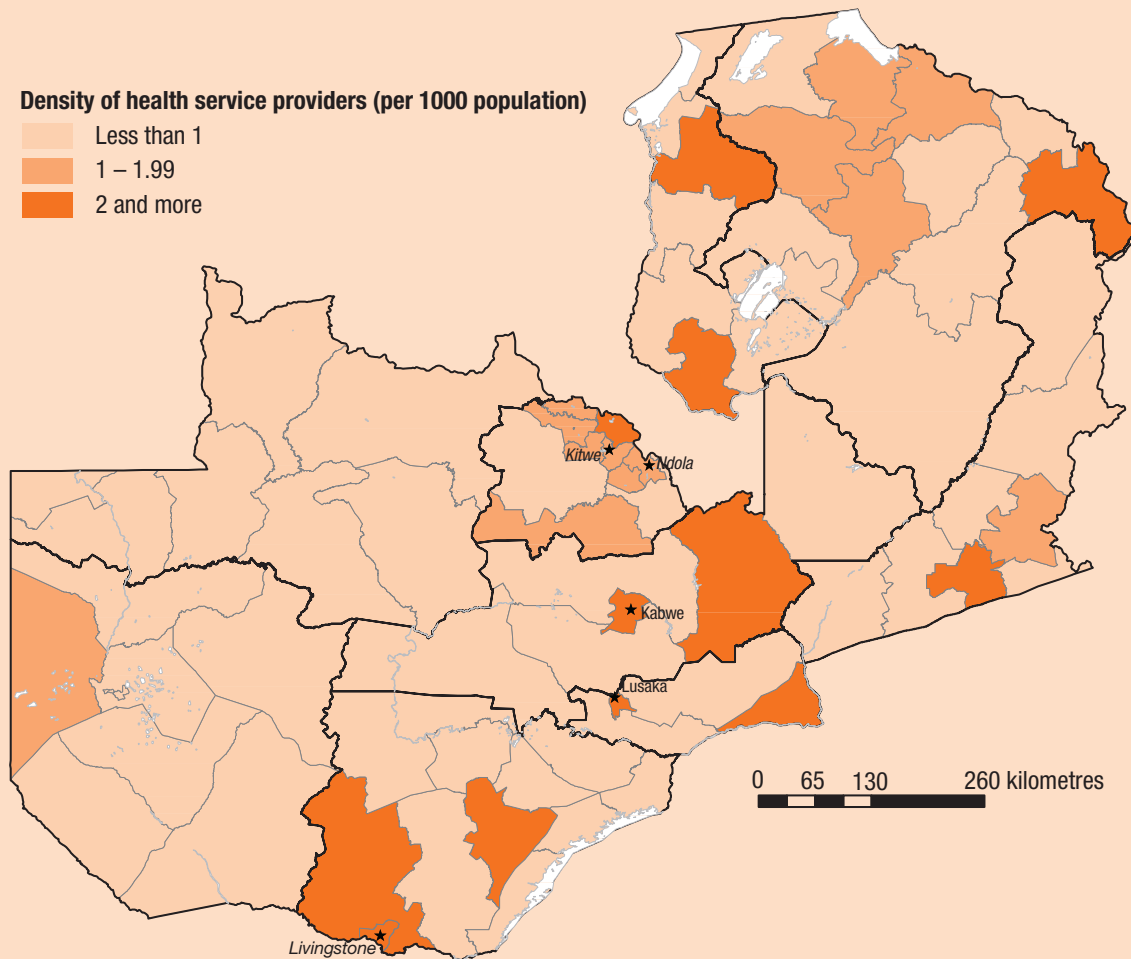
The correlation between the availability of health workers and coverage of health interventions suggests that the public's health suffers when health workers are scarce (20, 21, 25–27). This raises the more fundamental issue of whether there are enough health workers. Methodologically, there are no gold standards for assessing sufficiency. The following section examines sufficiency from the perspective of essential health needs.

Box 1.3 Where are the health workers? Service Availability Mapping

To help national decision-makers obtain information rapidly, WHO is working with countries to develop a tool called Service Availability Mapping (SAM). Using WHO's Health Mapper (a Geographic Information System-based software package) and a questionnaire loaded on personal digital assistants, district health teams collect critical information on health resources, public health risks and programme implementation, in order to provide updated maps of health services. For more information, see <http://www.who.int/healthinfo/>

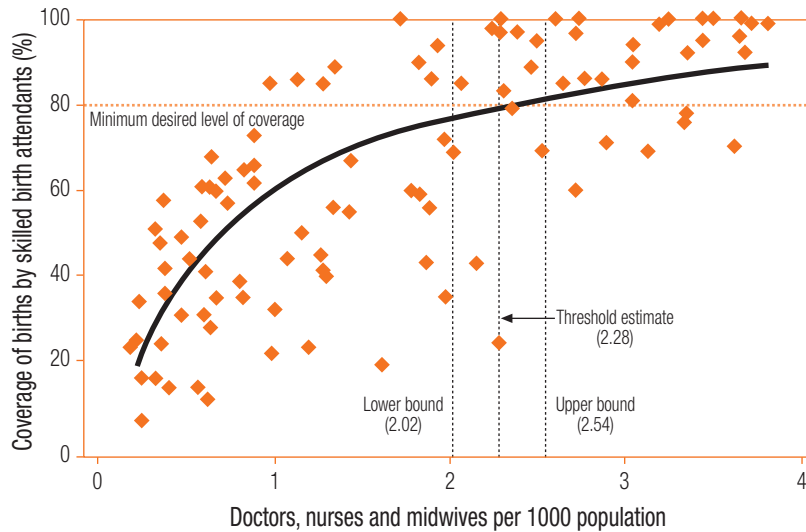
[systems/serviceavailabilitymapping/en/index.html](http://www.who.int/healthinfo/systems/serviceavailabilitymapping/en/index.html).

A rapid version of a national SAM has been applied in a dozen countries, providing a rich picture of services across districts. Data on human resources include the density and distribution of health workers by major cadre and training exposure in the last two years, unfilled posts and absentee rates. The figure shows the density of doctors, clinical officers, registered and enrolled nurses and midwives, combined, per 1000 population in Zambia.



Source: Ministry of Health, Zambia, in collaboration with WHO. Map production: Public Health Mapping and GIS/WHO.

Figure 1.4 Population density of health care professionals required to ensure skilled attendance at births



Data sources: (3, 30, 31).

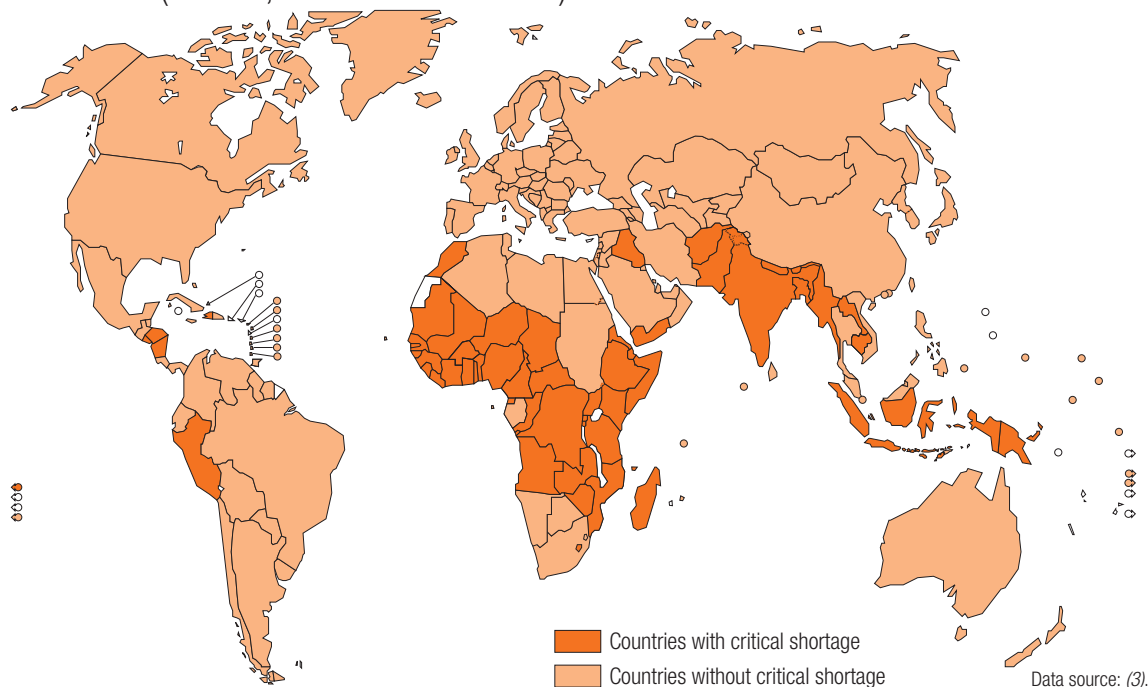
Needs-based sufficiency

Various estimates of the availability of health workers required to achieve a package of essential health interventions and the Millennium Development Goals (including the scaling up of interventions for HIV/AIDS) have resulted in the identification of workforce shortfalls within and across mostly low income countries. In the HIV/AIDS literature, scaling up treatment with antiretrovirals was estimated to require between 20% and 50% of the available health workforce in four African countries, though less than 10% in the other 10 countries surveyed (28). In more general terms, analysts estimated that in a best case scenario for 2015 the supply of health workers would reach only 60% of the estimated need in the United Republic of Tanzania and the need would be 300% greater than the available supply in Chad (29). Furthermore, *The world health report 2005* estimated that 334 000 skilled birth attendants would have to be trained globally over the coming years merely to reach 72% coverage of births (18).

To achieve a global assessment of shortfall, the Joint Learning Initiative (JLI), a network of global health leaders, launched by the Rockefeller Foundation, suggested that, on average, countries with fewer than 2.5 health care professionals (counting only doctors, nurses and midwives) per 1000 population failed to achieve an 80% coverage rate for deliveries by skilled birth attendants or for measles immunization (24). This method of defining a shortage, whether global or by country, is driven partly by the decision to set the minimum desired level of coverage at 80% and partly by the empirical identification of health worker density associated with that level of coverage. Using a similar “threshold”

“WHO estimates a shortage of more than 4 million doctors, nurses, midwives and others”

Figure 1.5 Countries with a critical shortage of health service providers (doctors, nurses and midwives)



method and updated information on the size of the health workforce obtained for this report, the JLI analysis has been repeated for skilled birth attendants (see Figure 1.4). A remarkably similar threshold is found at 2.28 health care professionals per 1000 population, ranging from 2.02 to 2.54 allowing for uncertainty.

The 57 countries that fall below this threshold and which fail to attain the 80% coverage level are defined as having a critical shortage. Thirty-six of them are in sub-Saharan Africa (Figure 1.5). For all these countries to reach the target levels of health worker availability would require an additional 2.4 million professionals globally (Table 1.3). (Based on the upper and lower limits of the threshold, the upper and lower limits of the estimated critical shortage are 3 million and 1.7 million, respectively.) This requirement represents only three types of health service provider. Multiplying the 2.4 million shortage by 1.8, which is the average ratio of total health workers to doctors, nurses and midwives observed in all WHO regions (except Europe, where there are no critical shortages based on these criteria), the global shortage approaches 4.3 million health workers.

In absolute terms, the greatest shortage occurs in South-East Asia, dominated by the needs of Bangladesh, India and Indonesia. The largest relative need exists in sub-Saharan Africa, where an increase of almost 140% is necessary to meet the threshold.

These estimates highlight the critical need for more health workers in order to achieve even modest coverage for essential health interventions in the countries most in need. They are not a substitute for specific country assessments of sufficiency, nor do they detract from the fact that the effect of increasing the number of health

Table 1.3 Estimated critical shortages of doctors, nurses and midwives, by WHO region

| WHO region | Number of countries | | In countries with shortages | | |
|------------------------------|---------------------|----------------|-----------------------------|--------------------|------------------------------|
| | Total | With shortages | Total stock | Estimated shortage | Percentage increase required |
| Africa | 46 | 36 | 590 198 | 817 992 | 139 |
| Americas | 35 | 5 | 93 603 | 37 886 | 40 |
| South-East Asia | 11 | 6 | 2 332 054 | 1 164 001 | 50 |
| Europe | 52 | 0 | NA | NA | NA |
| Eastern Mediterranean | 21 | 7 | 312 613 | 306 031 | 98 |
| Western Pacific | 27 | 3 | 27 260 | 32 560 | 119 |
| World | 192 | 57 | 3 355 728 | 2 358 470 | 70 |

NA, not applicable.

Data source: (3).

workers depends crucially on other determinants such as levels of income and education in the community (21, 25). Furthermore, economic factors also enter the equation: shortfalls based on need can co-exist with unemployment of health workers due to local market conditions (see Chapter 6 for further discussion).

ADDRESSING THE SHORTAGE – HOW MUCH WILL IT COST?

Making up the shortfall through training requires a significant investment. Assuming very rapid scaling up in which all the training is completed by 2015, the annual training costs range from a low of US\$ 1.6 million per country per year to almost US\$ 2 billion in a large country like India. The average cost per country of US\$ 136 million per year is of the same order of magnitude as the estimated cost of Malawi's Emergency Human Resources Programme (see Chapter 2). Financing it would require health expenditures to increase by US\$ 2.80 per person annually in the average country (the range is from US\$ 0.40 to just over US\$ 11) – an increase of approximately 11% on 2004 levels (34).

The estimate is limited to doctors, nurses and midwives, the occupations for which data on workforce numbers and training costs are most complete, so can be considered a lower limit. In the calculations, the target number of health workers has been adjusted upwards to account for population growth between 2005 and 2015, and student intakes have also been adjusted upwards to account for attrition during and after training. Region-specific training costs that include a capital component have been used where possible, though data are limited and the results should be interpreted with caution.

These estimates also assume that present trends and patterns of training will continue. Other ways of helping to tackle the observed shortages, including those aimed at increasing the productivity and motivation of the current workforce, or changing the skill mix of health workers, are described in subsequent chapters.

The additional annual cost of employing the new doctors, nurses and midwives once training has been fully scaled up is just over US\$ 311 million per country in 2004 prices. By 2015, to pay the salaries of the scaled-up workforce would

require a minimum increase of US\$ 7.50 per person per year in the average country. This can be taken to be a lower limit cost because some level of salary increase is likely to be necessary to retain the additional health workers in the health sector and in the country. The extent of the required increase is difficult to determine, partly because salaries in the deficit countries can be up to 15 times lower than those in countries that are popular destinations for migrants (32). The Millennium Project assumed salaries would need to double if the Millennium Development Goals were to be achieved (33), which would increase the current annual salary cost by US\$ 53 billion in the 57 countries. To put this figure into perspective, this represents an increase in the annual global wage bill for health workers of less than 5%. It would also require an increase in annual health spending by 2015 of US\$ 20 per person in the average country – an increase of over 75% on 2004 levels.

These figures need to be interpreted with caution, particularly because labour markets for health workers are evolving rapidly as globalization increases. It is very likely, for example, that salaries in some of the countries where shortages were not identified would have to be increased as well, to ensure that their workers did not migrate to some of the deficit countries. This type of effect is difficult to predict, but the numbers reported here clearly show the need for the international community actively to support the process of strengthening human resources for health.



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Dr John Awoonor-Williams is the only doctor at Nkwanta District Hospital, Ghana, serving a population of 187 000 in a remote, vast area in the northern part of the Volta Region.

CONCLUSION

The global profile presented here shows that there are more than 59 million health workers in the world, distributed unequally between and within countries. They are found predominantly in richer areas where health needs are less severe. Their numbers remain woefully insufficient to meet health needs, with the total shortage being in the order of 4.3 million workers.

The profile also shows how much is not known. Information on skill mix, age profiles, sources of income, geographical location, and other characteristics that are important for policy development is far from complete. One reason for this is the variation between countries in the definitions used to categorize health workers, which makes it difficult to ensure that the same people are being included as part of the health workforce in different settings. WHO is confronting this issue by developing a standard classification of health workers in collaboration with countries and other partners.

The other reason is simply the lack of data. In some countries, information on the total size of the health workforce is not routinely collected, while little is known about certain categories of health workers even in countries with extensive data reporting systems. The lack of reliable, up-to-date information greatly restricts the ability of policy-makers at national and international levels to develop evidence-based strategies to resolve the health workforce crisis, or to develop health systems to serve the needs of disadvantaged populations. Relatively small investments by the global community in this area could well have substantial returns. Chapter 7 returns to this issue and suggests some possible solutions. Meanwhile, Chapter 2 discusses some of the most important challenges that face the global health workforce today.

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